Notice of Allowability	Application No.	Applicant(s)	
	10/664,948	IMAFUKU ET AL.	
	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *9/17/07*.

2. ☒ The allowed claim(s) is/are *1-18 and 27-34*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

KING Y. POON
SUPERVISORY PATENT EXAMINER

The following is an examiner's statement of reasons for allowance:

Renumbered as claims 1-26 for pending claims 1-18, 27-34.

Claims 1-3, 10-12, 27-29 of the current application are allowed for the reason of none of prior art of record teaches nor suggests "a threshold table which stores a quantization threshold for each of the color components in accordance with a combination of color component values of pixels; modulation amount determination means for determining a threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel; and quantization means for acquiring a threshold for each color component from said threshold table in accordance with a combination of color components of the target pixel, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added by said error addition means."

Claims 4-7, 13-16, 30-33 of the current application are allowed for the reason of none of prior art of record teaches nor suggests "error addition means for adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel; quantization means for quantizing each color component of the target pixel; and a diffusion coefficient table which stores a diffusion coefficient for diffusing
a quantization error produced by said quantization means, in accordance with a combination of color component values of a pixel, wherein said error addition means

adds an error value to the target pixel in accordance with a combination of color components of the target pixel and a diffusion coefficient selected from said diffusion coefficient table."

Claims 8, 17, 34 of the current application are allowed for the reason of none of prior art of record teaches nor suggests "modulation amount determination means for determining a threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel; quantization means for acquiring a threshold for each color component from said threshold table in accordance with a combination of color components of the target pixel, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added by said error addition means; and a diffusion coefficient table which stores a diffusion coefficient for diffusing a quantization error produced by said quantization means, in accordance with a combination of color component values of a pixel, wherein said error addition means adds an error value to the target pixel in accordance with a combination of color components of the target pixel and a diffusion coefficient selected from said diffusion coefficient table."

Claims 9, 18 of the current application are allowed for the reason of none of prior art of record teaches nor suggests "a threshold table which stores a quantization threshold for each of the color components in accordance with a combination of color component values of pixels; modulation amount determination means for determining a

threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel; and quantization means for acquiring a threshold for each color component from said threshold table in accordance with a combination of color components of the target pixel, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added by said error addition means, wherein a combination of two kinds of color components is quantized by said image processing apparatus and a remaining color component is quantized with a value of a color component other than a target color component being regarded as O."

The closest prior art Yoshida (US 6,169,608) discloses a method for converting continuous tone color image data into pseudo-halftone color image data, the method comprising the steps of: successively judging whether or not each of a plurality of pixels, arranged in a continuous tone color image, is located at a predetermined printing-prohibited pixel position, while comparing, for each of a plurality of different color components, density data of at least one pixel other than that located at the printing-prohibited pixel position, with a threshold value; and compulsively converting the density value into the binary value of OFF when the subject pixel is judged to be located at the predetermined printing-prohibited pixel position and converting the density value into a binary value of either ON or OFF based on the compared result when the subject pixel is judged not to be located at the predetermined printing-prohibited pixel position.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Quang N. Vo 9/25/07
Patent Examiner

KING Y. POON
SUPERVISORY PATENT EXAMINER